EV8040-N-00A

Full-Bridge or Single-Ended Audio Amplifier Evaluation Board

DESCRIPTION

The EV8040-N-00A is an evaluation board designed to demonstrate the capabilities of MPS's MP8040. It can be configured as a stereo single-ended amplifier or a full-bridge mono amplifier.

The MP8040 is a general purpose, high-frequency, half-bridge power driver. It integrates both top and bottom N-channel MOSFET power switches. It interfaces with standard logic signals, and is available in small, 8-lead SOIC package.

ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Units
Input supply voltage	V_{IN}	7.5 to 24	V
Peak output current	$I_{PEAK-MAX}$	9	A
RMS output current	$I_{RMS-MAX}$	4.25	A

FEATURES

- Up to 1.2MHz Switching Frequency
- Protected Integrated Power 0.1Ω Switches
  - Designed Switch Dead time of 30ns
  - All Switches Current Limited
  - Internal Under-Voltage Protection (UVP)
  - Internal Thermal Protection
- 2.5μA Standby Mode
- Fault Indicator Output

APPLICATIONS

- Full or Half-Bridge DC/DC Switching Regulators
- Class-D Audio Drivers
- Motor Drivers

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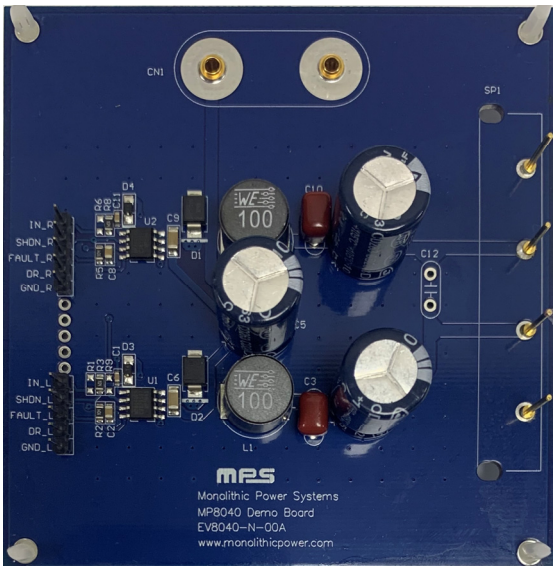
EV8040-N-00A EVALUATION BOARD



(LxWxH) 8.89cmx9.14cmx3cm

Board Number	MPS IC Number
EV8040-N-00A	MP8040DN

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QUICK START GUIDE

1. The EV8040-N-00A can be configured as a stereo single-ended audio amplifier.
2. To configure the board as a full-bridge circuit, short R4, R7, and R9. Then remove C4 and C7. Lastly, use a 0.47µF capacitor for C12.
3. Connect the audio inputs to the IN pins (see Figure 1).
4. Connect speakers to pins 1, 2, 3, and 4 for single-ended configuration (see Figure 1). Use pins 2 and 3 to form a bridged circuit.
5. Connect the power supply to the VIN terminals (see Figure 1).
6. SHDN enables/disables the MP8040. Drive SHDN low to turn the MP8040 on; drive SHDN high to turn the device off. If SHDN is not used, connect it to GND.
7. A low output at FLT indicates that the MP8040 has detected a fault, and the device shuts down as a result.
8. The DR pin is an optional, 5V fixed-voltage output capable of driving a 1mA load for external circuitry.

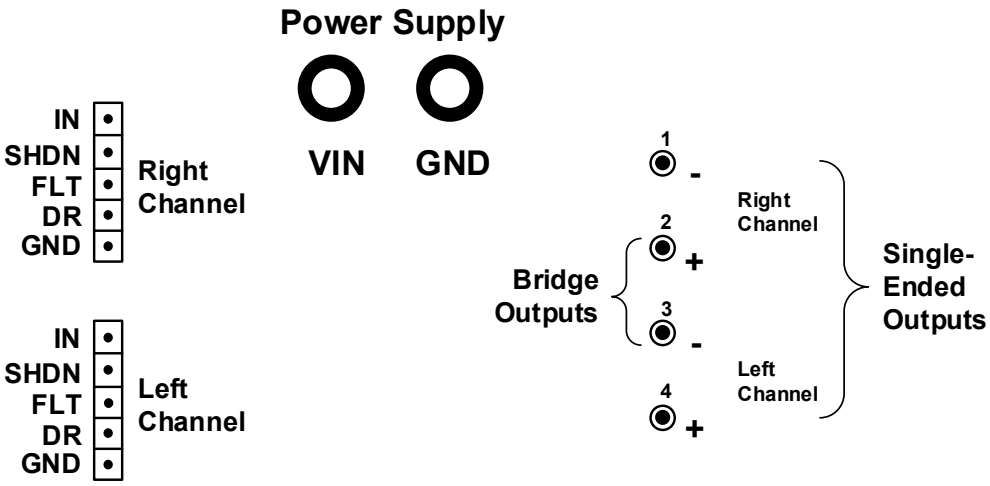

Figure 1: Top-Side Evaluation Board Diagram

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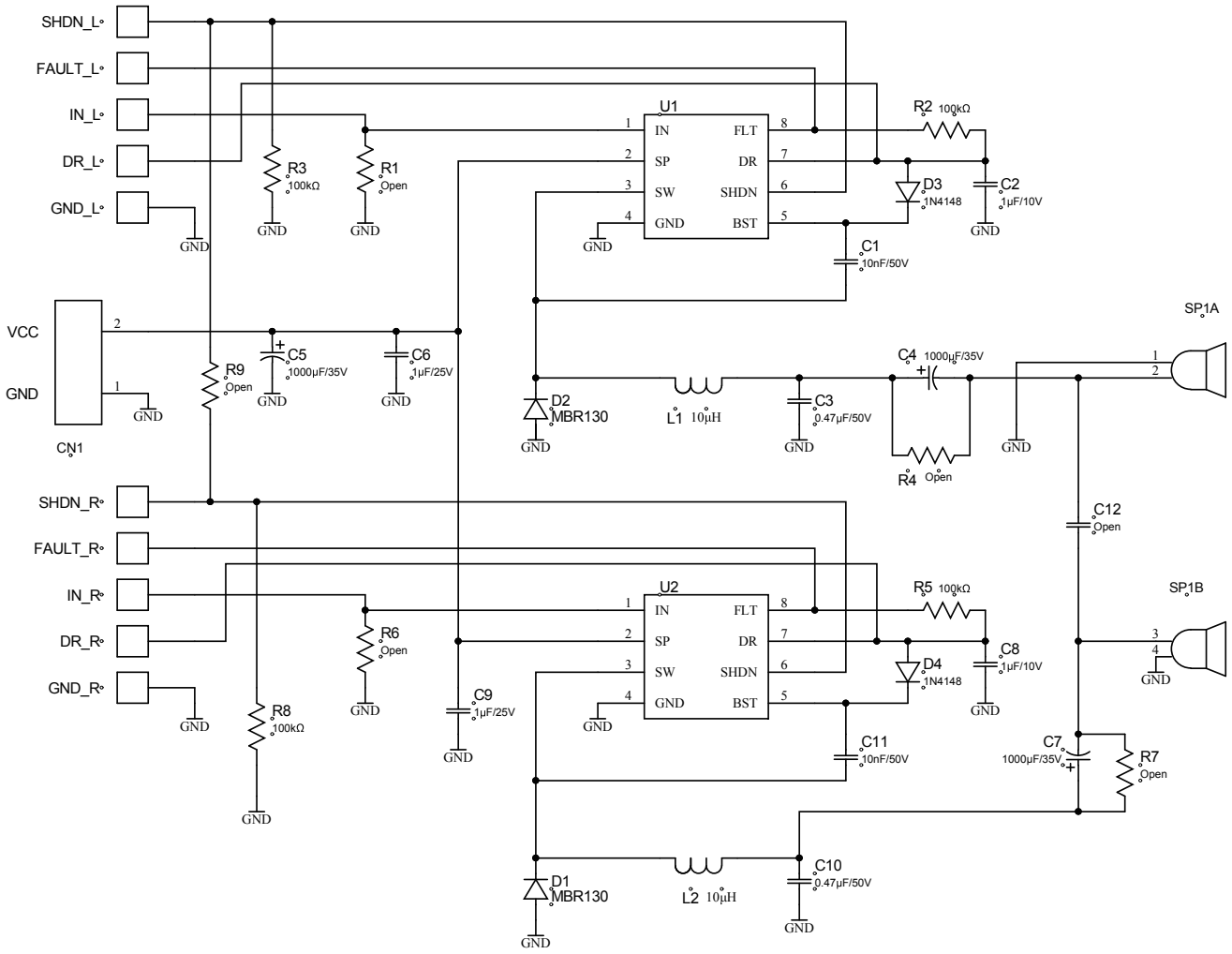
EVALUATION BOARD SCHEMATIC



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EV8040-N-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
2	U1, U2	24V, 4.25A	PWM power driver	SOIC-8N	MPS	MP8040DN
3	C4, C5, C7	1000µF	Electrolytic capacitor, 35V, DIP	12.5 x 20	Jiang Hai	CD263-35V1000
3	C3, C10	0.47µF	Film capacitor, 50V	5.08	Panasonic	ECQV1H474JL
2	C1, C11	10nF	Ceramic capacitor, 50V, NPO/X7R	0603	murata	GRM188R71H103KA01D
2	C2, C8	1µF	Ceramic capacitor, 10V, X7R	0805	murata	GRM21BR71A105KA01L
2	C6, C9	1µF	Ceramic capacitor, 25V, X7R	1206	murata	GRM31MR71E105KA01
2	L1, L2	10µH	10µH, 5A, inductor	DIP	wurth	7447471100
4	R2, R3, R5, R8	100kΩ	5% resistor	0805	Yageo	RC0805JR-07100KL
2	D1, D2	1A,30V	1A, 30V, Schottky rectifier	SMB	On Semiconductor	MBRS130T3G
2	D3, D4	300mA, 100V	300mA, 100V, rectifier	SOD123	Diodes Inc.	1N4148WS
10	IN_L, SHDN_L, FAULT_L, DR_L, GND_L, IN_R, SHDN_R FAULT_R, DR_R, GND_R	2.54mm	2.54mm Connector	DIP	Electrical Market	61304011121
4	SP1	Φ = 1mm	1mm connector	DIP	Electrical Market	Φ = 1mm Needle
2	CN1	Φ = 2mm	2mm connector	DIP	Electrical Market	Φ = 2mm Needle

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PCB LAYOUT

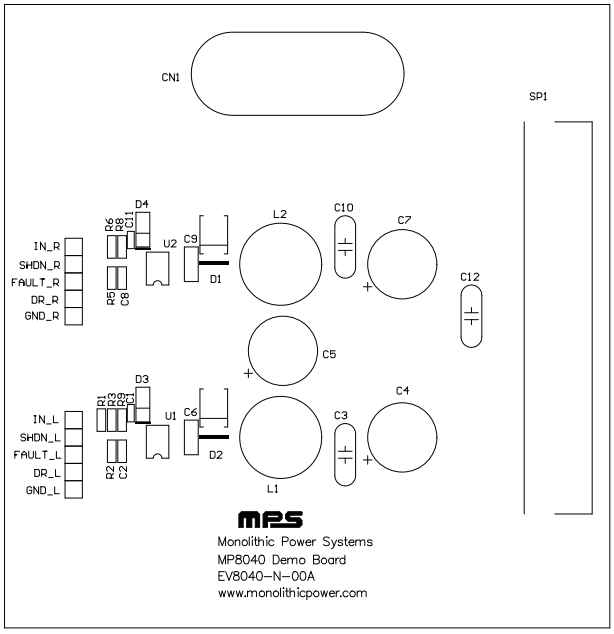

Figure 2: Top Silk Layer

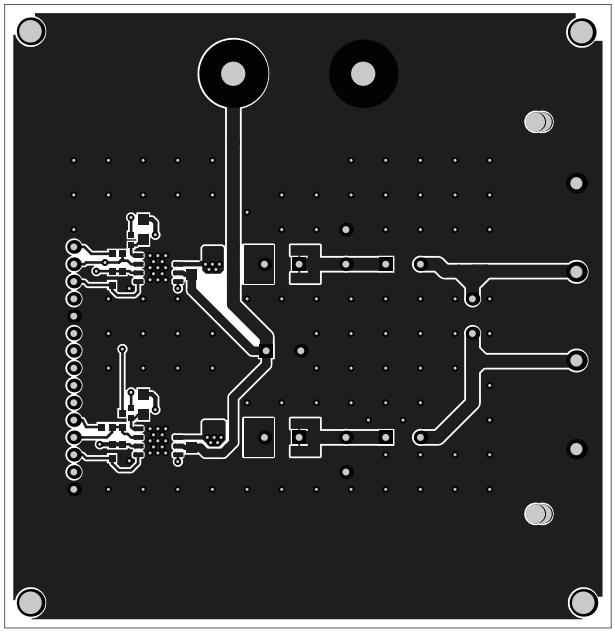

Figure 3: Top Layer

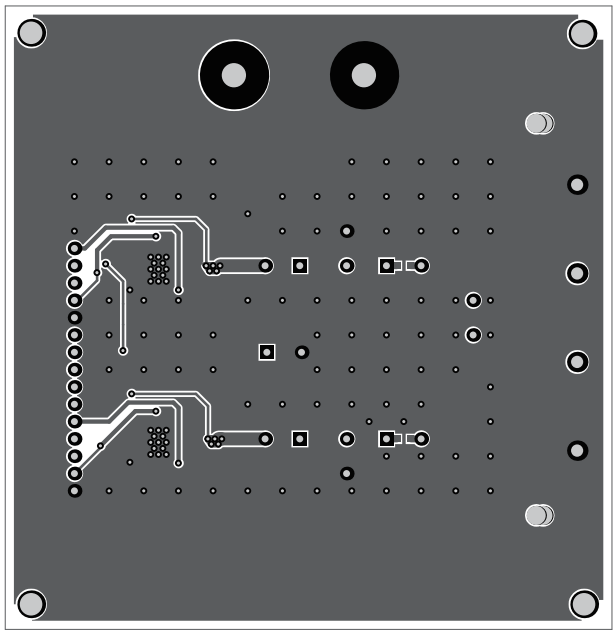

Figure 4: Bottom Layer

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